

Figure 1, HCV J4L6 genome wild-type cDNA sequence, reference accession number
AF054247,

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Figure 2, codon optimised HCV Core polynucleotide

ATGAGCACCAACCCCAAGCCCCAGCGCAAGACCAAGCGGAACACCAACCGGAGACCCAGGA
CGTCAAGTTCCCAGGAGGAGGCCAGATCGTGGGCGGCGTGTACCTGCTGCCCCGCCGGGGGC
CCCGGCTGGGCGTGCGCGCCACCCGCAAGACCAGCGAGCGCTCCCAGCCAAGAGGCAGACGC
CAGCCGATCCCGAAGGCCCGCCGCCCTGAGGGCCGGGCTTGGGCCCAGCCAGGCTACCCCTG
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CCGGGAACCTGCCCCGGCTGCAGCTTCTCCATCTTCCTGCTGGCGCTGCTGAGCTGCCTCACC
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Figure 3, Codon optimised HCV NS3 polynucleotide

ATGGCCCCCATCACCGCCTACAGCCAGCAGACCCGGGGACTGCTCGGCTGCATCATCACCTC
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ATGGCGTGTCATGTCCGCTGACCTGGAGGTGGTCACCTGA

Figure 4, codon optimised HCV NS4B polynucleotide

ATGTTTTGGGCCAAGCATATGTGGAAC TTCATCAGCGGCATCCAGTACCTCGCCGGGCTGAG
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ACCCAGATCCTGAGCTCCCTGACCATCACCCAGCTGCTCAAGAGGCTGCACCAGTGGATCAA
CGAGGACTGCTCCACCCCTTGCTGA

Figure 5, codon optimised HCV NS5B polynucleotide

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CGAGCCTCTCGACCTGCCCCAGATCATCGAGAGACTGCATGGGCTCAGCGCCTTCTCCCTCC
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CCTCTGCGCGTTTGGCGGCATCGCGCCAGGAGTGTGAGGGCCAAGCTGCTGAGCCAGGGCGG
AAGGGCCGCCACCTGCGGCCGGTATCTCTTCAACTGGGCCGTGCGCACCAAGCTCAAGCTCA
CCCCATCCCTGCCGCCAGTCAGCTGGATCTCAGTGGGTGGTTTCGTGGCCGGCTATTCTGGC
GGCGACATCTACCACTCCCTCAGCAGGGCGCGCCCCCGCTGGTTCCCCCTGTGCCTGCTGCT
CCTGAGCGTCCGAGTCGGCATCTACCTGCTGCCCAACCGCTGA

Figure 6, Translation of HCV J4L6 genome (wild-type sequence)

1 MSTNPKPQRK TKRNTNRRPQ DVKFPGGGQI VGGVYLLPRR GPRLGVRATR KASERSQPRG
61 RRQPIPKARR PEGRAWAQPG YPWPLYGNEG LGWAGWLLSP RGSRPSWGPT DPRRRSRNLG
121 KVIDTLTCGF ADLMGYIPLV GAPLGGAARA LAHGVRVLED GVNYATGNLP GCSFSIFLLA
181 LLSCLTIPAS AYEVRNVSGI YHVTNDCSNS SIVYEAADVI MHTPGCVPCV QEGNSSRCWV
241 ALTPTLAARN ASVPTTTIRR HVDLLVGTA A FCSAMYVGDL CGSIFLVSQ L FTFSPRRHET
301 VQDCNCSIYP GHVSGHRMAW DMMNWSPTT ALVVSQLLRI PQAVVDMVAG AHWGVLAGLA
361 YYSVMGNWAK VLIvallFAG VDGETHTTGR VAGHTTSGFT SLFSSGASQK IQLVNTNGSW
421 HINRTALNCN DSLQTGFFAA LFYAHKFNSS GCPERMASCR PIDWFAQWG PITYTKPNSS
481 DQRPYCWYHA PRPCGVVPAS QVCGPVYCF T PSPVVVGTTD RSGVPTYSWG ENETDVMLLN
541 NTRPPQGNWF GCTWMNSTGF TKTCGGPPCN IGGVGNRTLI CPTDCFRKHP EATYTKCGSG
601 PWLTPRCLVD YPYRLWHYPC TLNFSIFKVR MYVGGVEHRL NAACNWRGE RCNLED RDRS
661 ELSPLLLSTT EWQILPCAFT TLPALSTGLI HLHQNI DVQ YLYGVGSAFV SFAIKWEYIL
721 LLFLLLADAR VCACLWMLL IAQAEAALEN LVVLNAASVA GAHGILSFLV FFCAAWYIKG
781 RLAPGAAYAF YGVWPLLLLL LALPPRAYAL DREMAASC GG AVLVLGLVFLT LSPYYKVFLT
841 RLIWWLQYFI TRAEAHMQVW VPPLNVRGGR DAIILLTCAV HPELIPDITK LLLAILGPLM
901 VLQAGITRVP YFVRAQGLIR ACMLVRKVAG GHYVQMVMFK LGALTGT YVY NHLTPLRDWA
961 HAGLRDLAVA VEPVVFSA ME TKVITWGADT AACGDIILGL PVSARRGKEI FLGPADSLEG
1021 QGWRL LAPIT AYSQQTRGVL GCIITSLTGR DKNQVEGEVQ VVSTATQ SFL ATCINGVCWT
1081 VYHGAGSKTL AGPKGPITQM YTNVDL DLVG WQAPPGARSM TPCSCGSSDL YLVTRHADVI
1141 PVRRRGDSRG SLLSPRPVS Y LKGSSGGPLL CPSGHVVG VF RAAVCTR GVA KAVDFIPVES
1201 METTMRSPVF TDNSTPPAVP QTFQVAHLHA PTGSGKSTKV PAAYAAQGYK VLVLNPSVAA
1261 TLGFGAYMSK AHGIDPNIRT GVRTITTGGS ITYSTYKFL ADGGC SGGAY DIIICDECHS
1321 TDSTTILGIG TVLDQAETAG ARLVVLATAT PPGSVTV PHP NIEBIGLSNN GEIPFYGKAI
1381 PIEAIKGRH LIFCHSKK KC DELAAKL TGL GLNAVAYYRG LDVSVIPP IGV DVVVVATDAL
1441 MTGFTGDFDS VIDCNTCVTQ TVDFS LDPTF TIETTTVPQD AVSR SQRRGR TGRGRSGIYR
1501 FVTPGERPSG MFDSSVLCEC YDAGCAWYEL TPAETSVRLR AYLNTPGLPV CQDHLEFWES
1561 VFTGLTHIDA HFLSQTKQAG DNFPYLVAYQ ATVCARAQAP PPSWDQM WKC LIRLKP TLHG
1621 PTPLLYRLGA VQNEVILTHP ITKYIMACMS ADLEVVTSTW VLVGGVLAAL AAYCLTTGSV
1681 VIVGRIILSG KPAVVPDREV LYQEFDEMEB CASQLPYIEQ GMQLAEQFKQ KALGLLQTAT
1741 KQAEAAAPVV ESKWRALETF WAKHMWNFIS GIQYLAGLST LPGNPAIASL MAFTASITSP
1801 LTTQNTLLFN ILGGWVAAQL APPSAASAFV GAGIAGAAVG SIGLGKVLVD ILAGYGAGVA
1861 GALVAFK VMS GEVPSTEDLV NLLPAILSPG ALVVG VVCAA ILRRHVGPGE GAVQWMNRLI
1921 AFASRGNHVS PTHYVPESDA AARVTQILSS LTITQLL KRL HQWINE DCST PCSG SWLRDV
1981 WDWICTVLTD FKTWLQSKLL PRLPGVPFLS CQRGYKGVWR GDGIMQTTCP CGAQIAGHV K
2041 NGSMRIVGPR TCSNTWHGTF PINAYTTGPC TPSPAPNYSR ALWRVAAEEY VEVTRVGDFH
2101 YVTGMTTDNV KCPCQVPAP E FFEVDGVRL HRYAPACKPL LREDVTFQVG LNQYLVGSQ L

2161 PCEPEPDVTV LTSMLTDPSH ITAETAKRRL ARGSPPSLAS SSASQLSAPS LKATCTTHHD
2221 SPDADLIEAN LLWRQEMGGN ITRVESENKV VILDSFEPLH AEGDEREISV AAEILRKSRL
2281 FPSALPIWAR PDYNPPLLES WKDPDYVPPV VHGCPLPPTK APPIPPPRRK RTVVLTESNV
2341 SSALAEELATK TFGSSGSSAV DSGTATALPD LASDDGDKGS DVESYSSMPP LEGEPGDPDL
2401 SDGSWSTVSE EASEDVVCCS MSYTWGALI TPCAAEESKL PINPLSNSLL RHHNMVYATT
2461 SRSASLRQKK VTFDRLQVLD DHYRDVLKEM KAKASTVKAK LLSIEEACKL TPPHSAKSKF
2521 GYGAKDVRNL SSRVNHIRS VWEDLLEDTE TPIDTTIMAK SEVFCVQPEK GGRKPARLIV
2581 FPDLGVRVCE KMALYDVVST LPQAVMGSSY GFQYSPKQRV EFLVNTWKSK KCPMGFSYDT
2641 RCFDSTVTES DIRVEESIQ CCDLAPEARQ AIRSLTERLY IGGPLTNSKG QNCGYRRCRA
2701 SGVLTTS CGN TLTCYLKATA ACRAAKLQDC TMLVNGDDL VICESAGTQE DAAALRAFTE
2761 AMTRYSAAPP DPPEYDLE LITSCSSNVS VAHDASGKRV YYLTRDPTTP LARAAWETAR
2821 HTPINSWLGN IIMYAPTLWA RMILMTHFFS ILLAQEQLEK ALDCQIYGAC YSIEPLDLPO
2881 IIERLHGLSA FTLHSYSPGE INRVASCLRK LGVPPLRTWR HRARSVRACL LSQGGRAATC
2941 GRYLFNWAVR TKLKLTPIPA ASQLDLGWF VAGYSGGDIY HSLSRARPRW FPLCLLLLSV
3001 GVGIIYLLPNR

Figure 7, p7313-ie

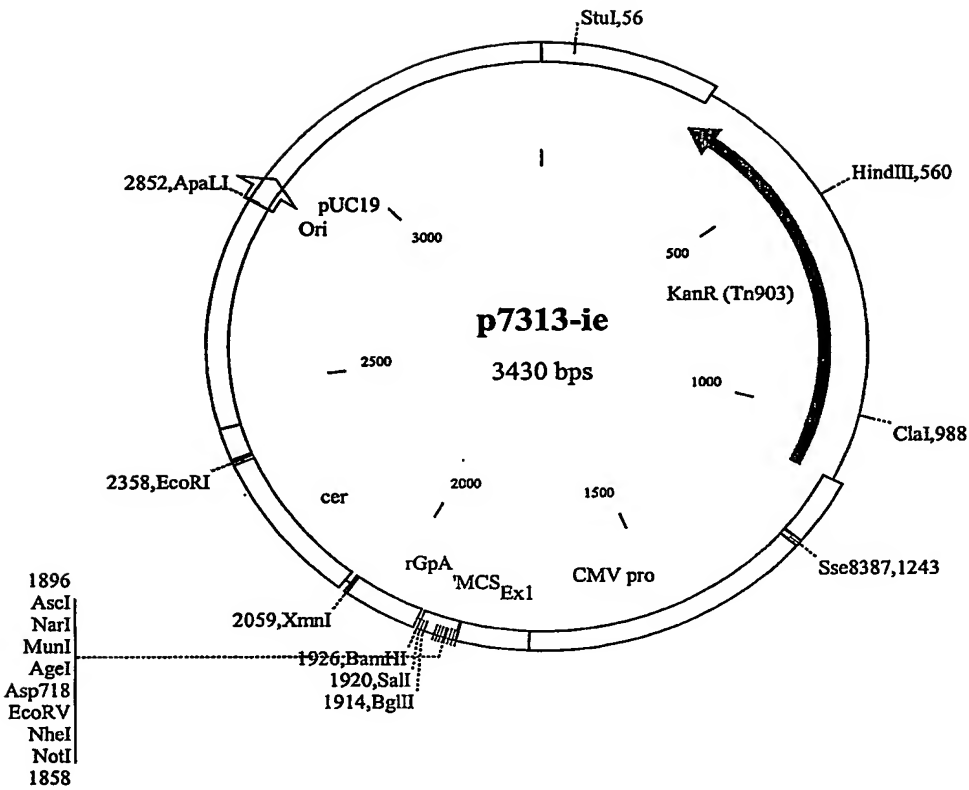


Figure 8, Immune responses to Core

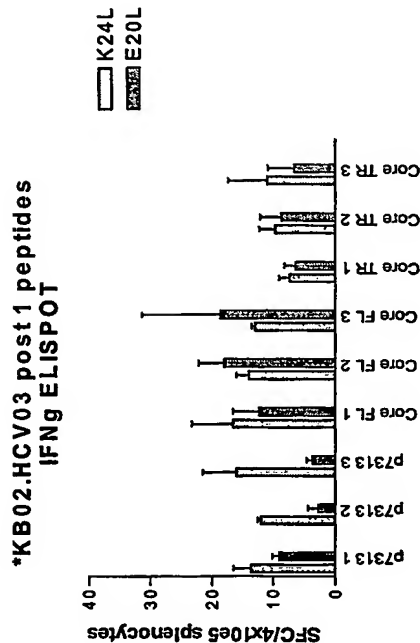
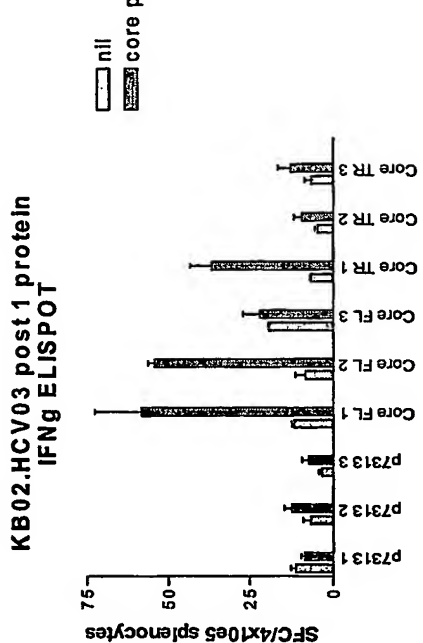
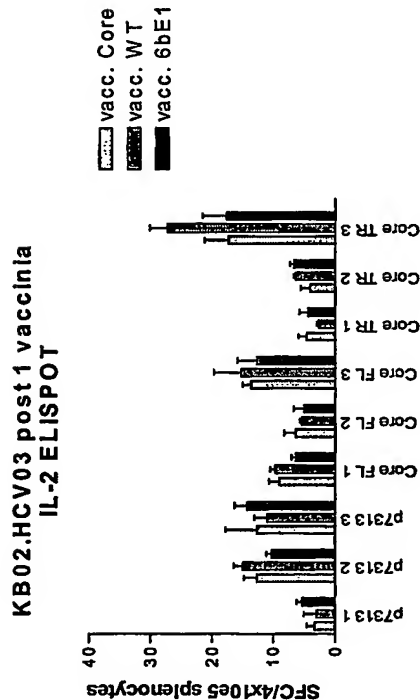
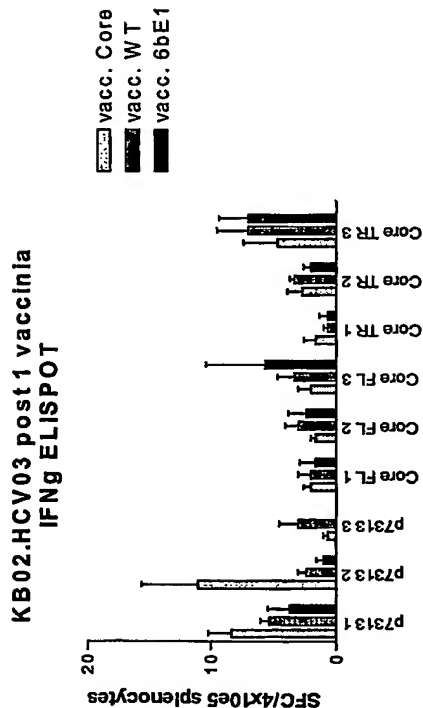
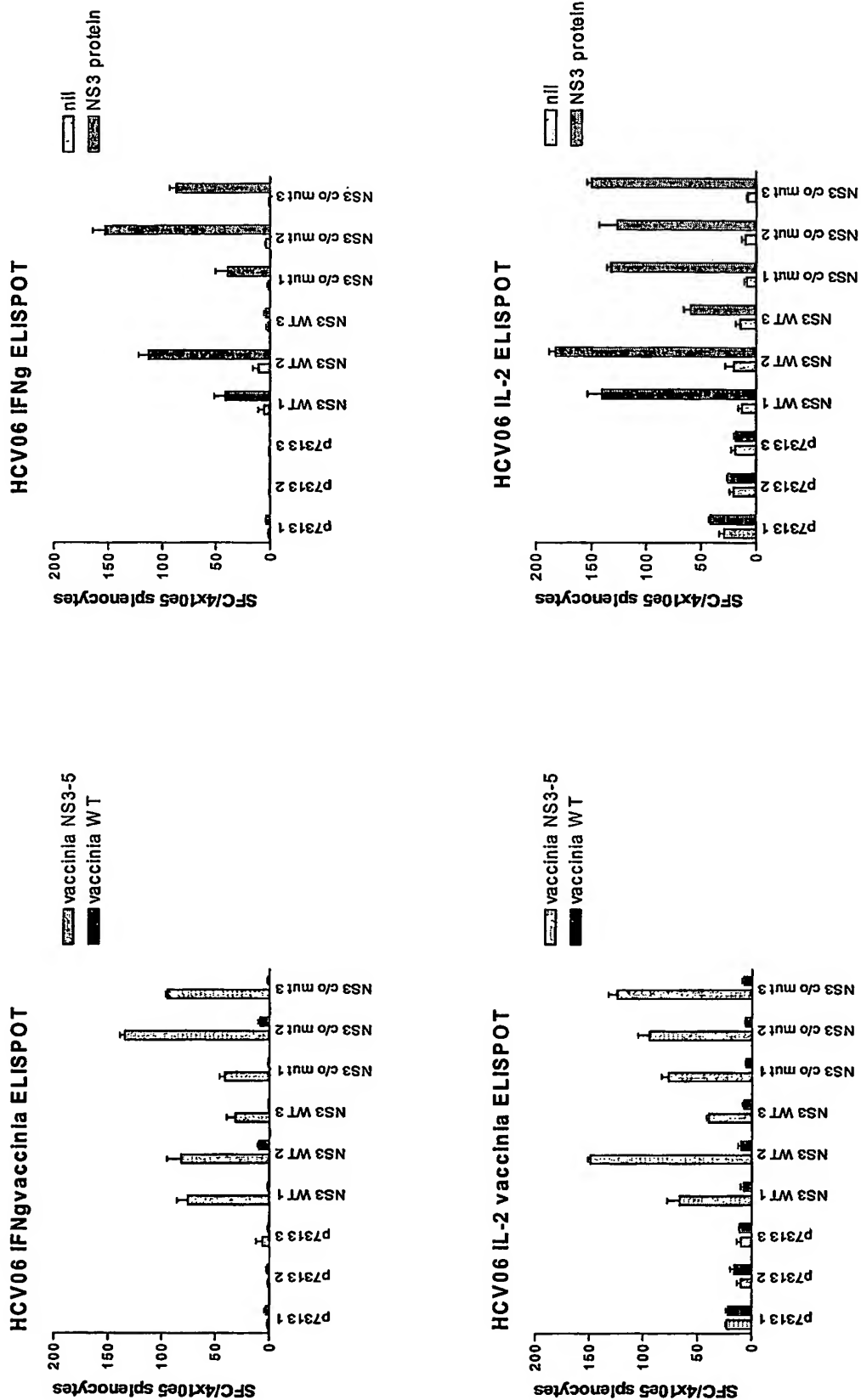


Figure 9, NS3 immunogenicity



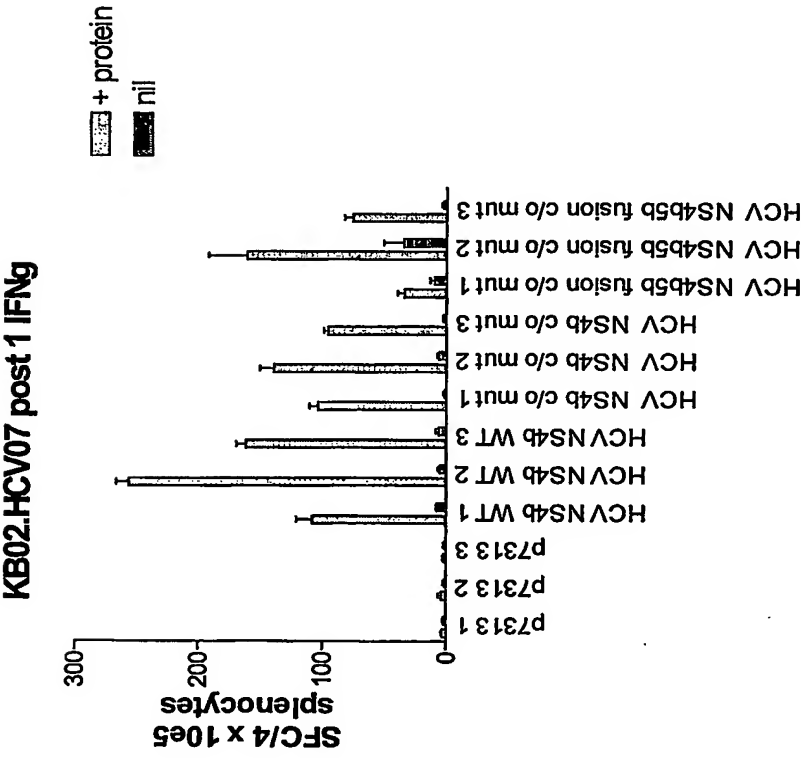
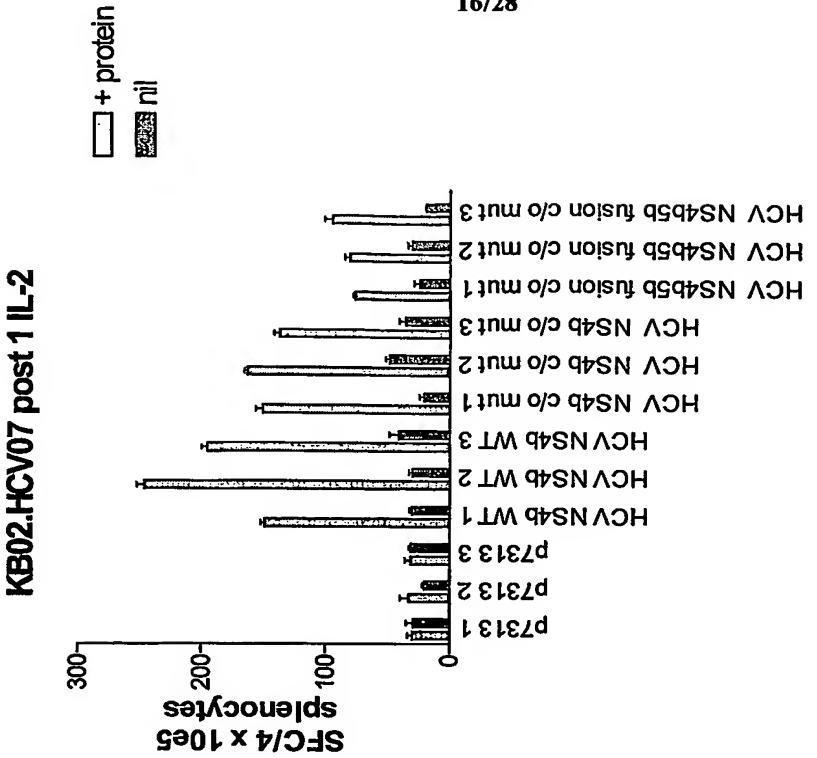


Figure 10, Immune responses to NS4B

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Figure 11, NS5B immune responses

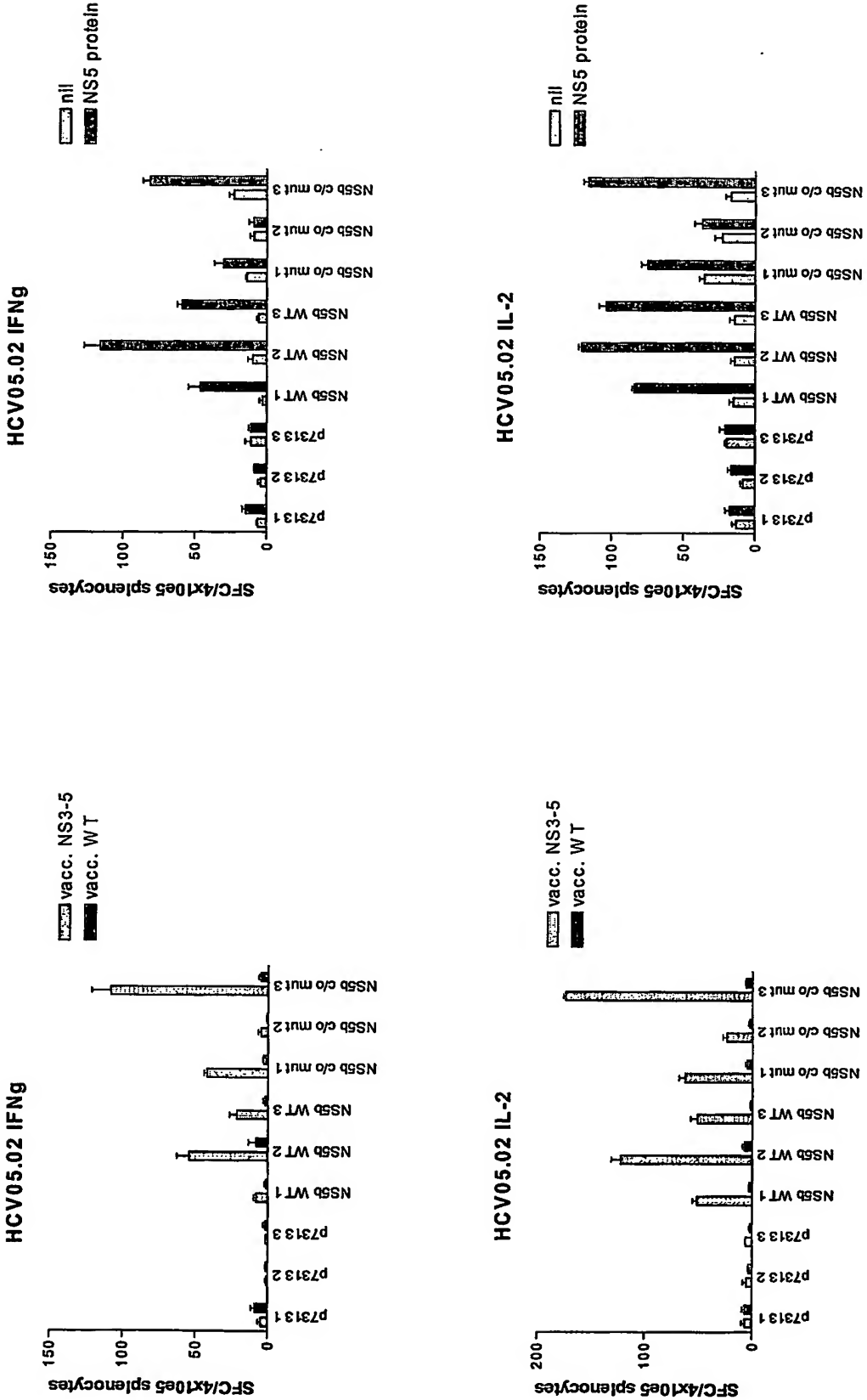


FIG. 12

Anti-HCV NS5B

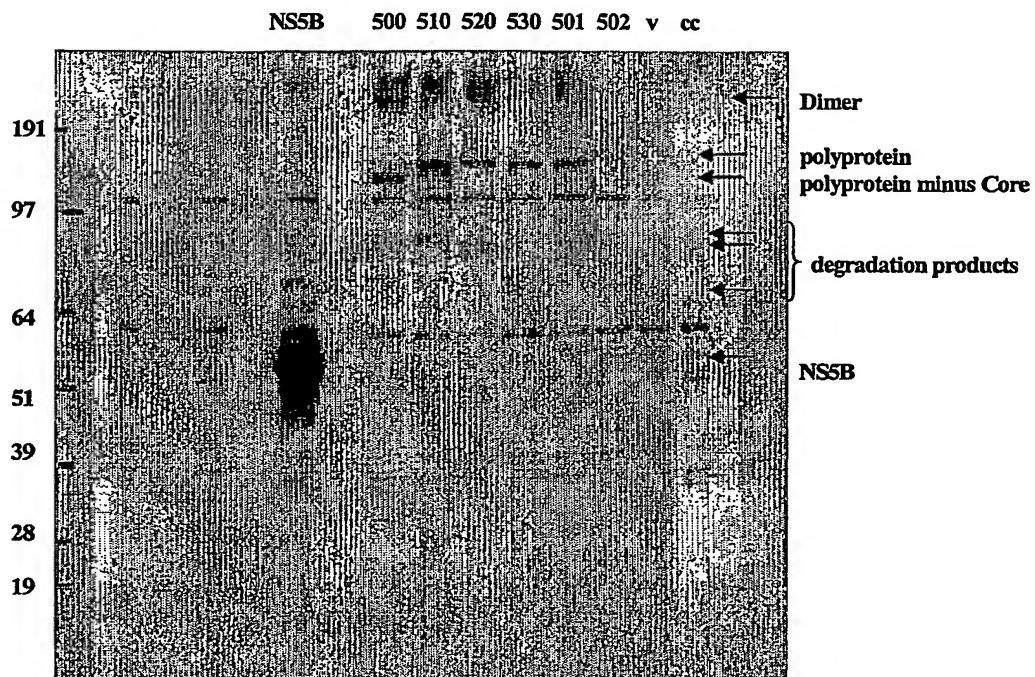
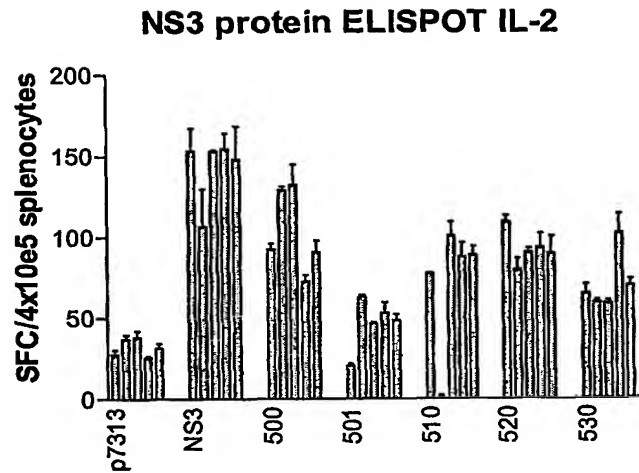
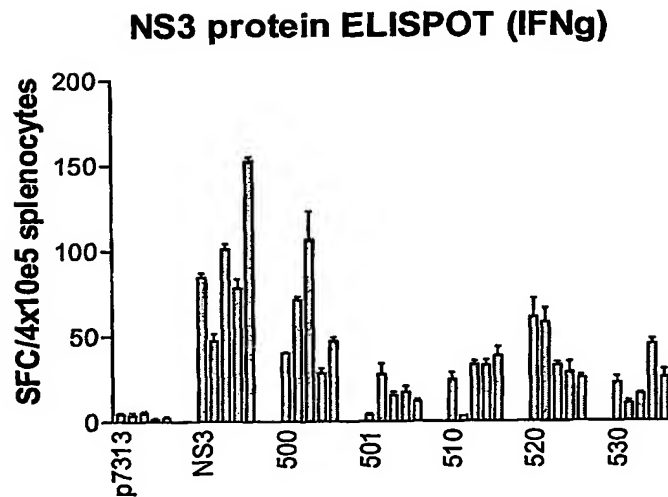


FIG. 13, A



B.



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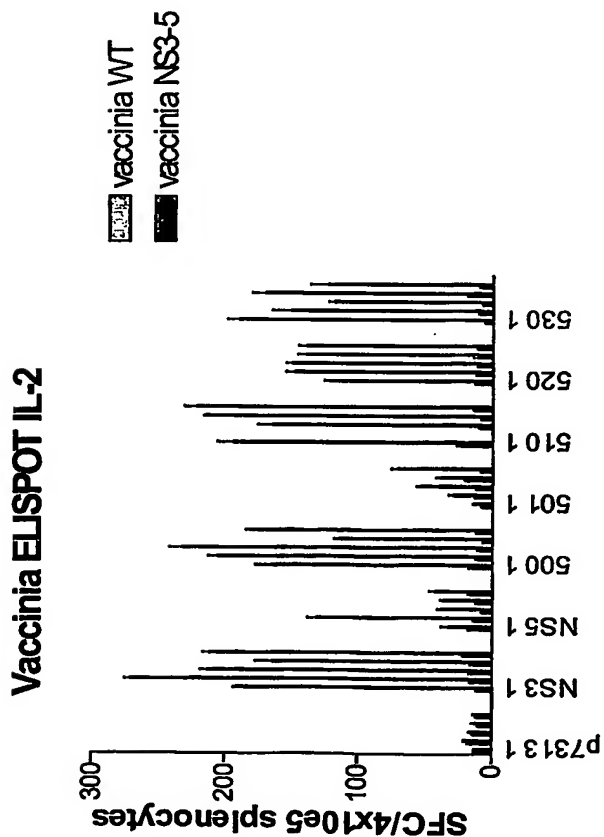
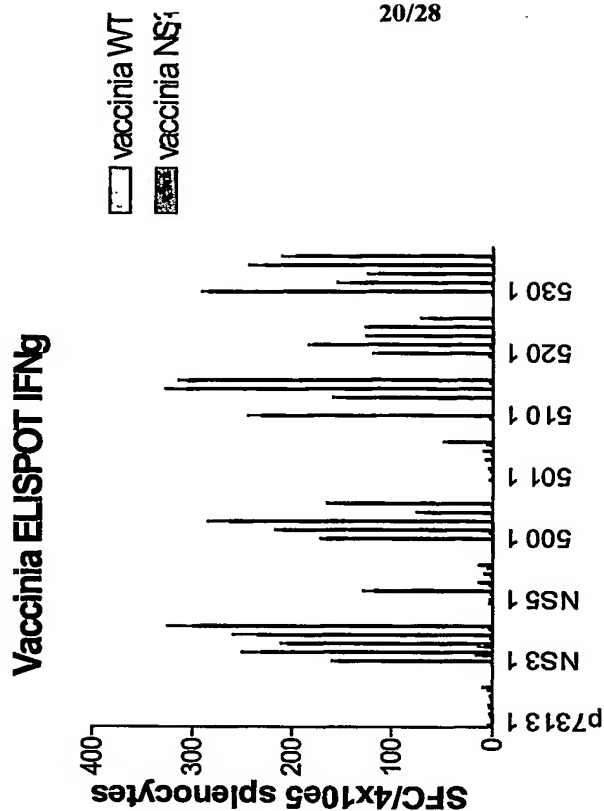


FIG 14.

FIG. 15,

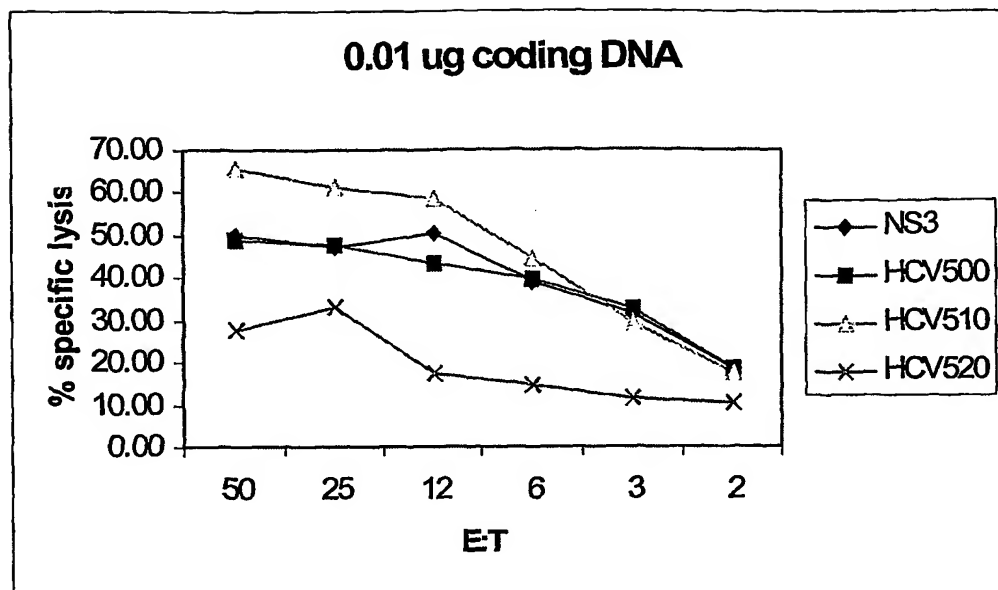


FIG. 16,

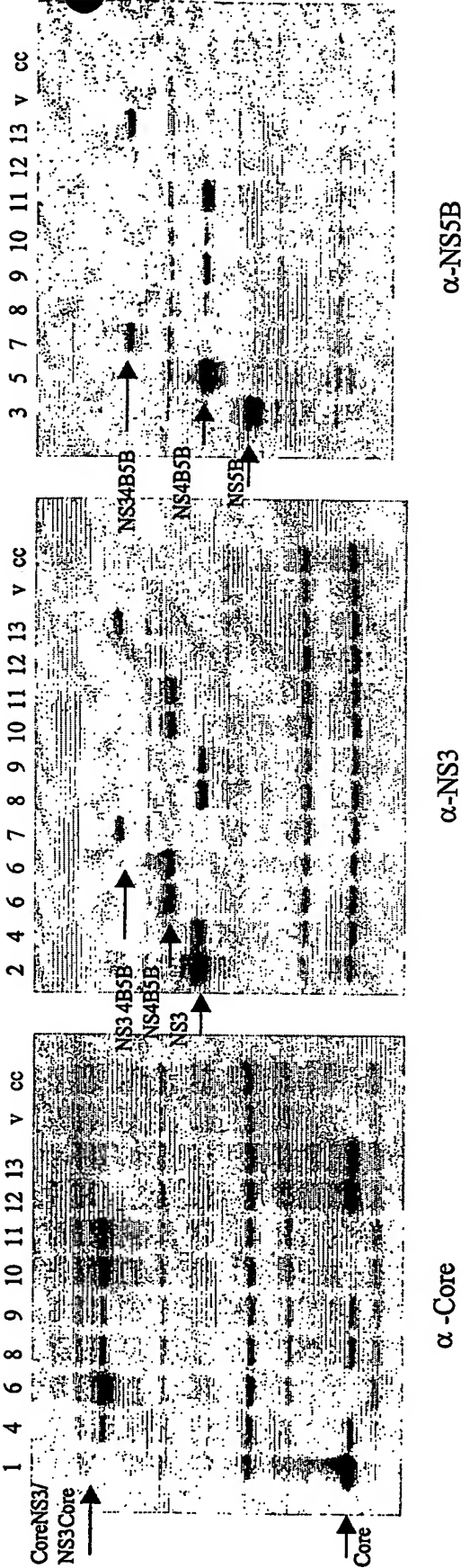


FIG. 17, Comparison of NS3 T cell response induced by dual promoter constructs.

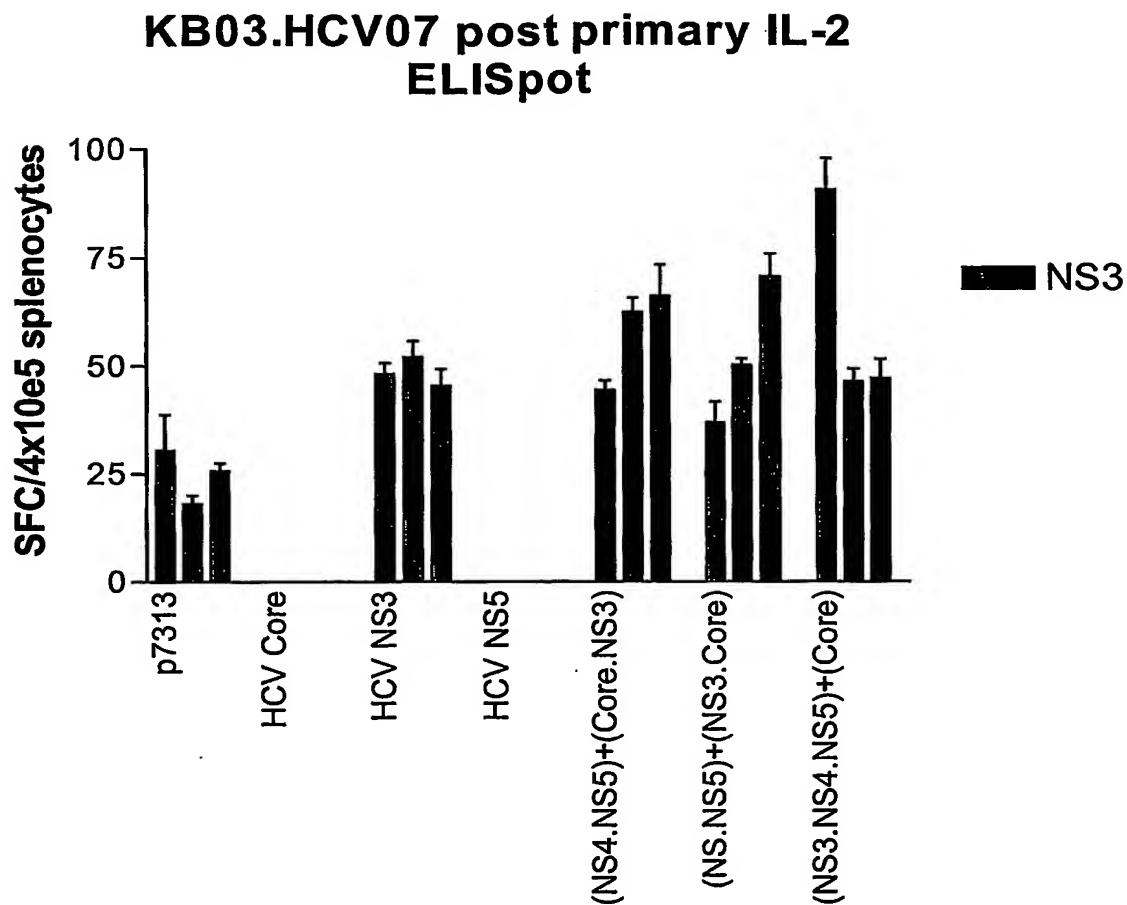
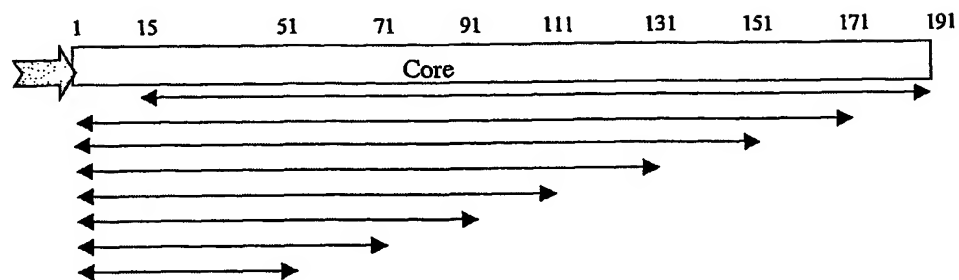


FIG. 18,



MW C191 CA15 C171 C151 C131 C111 C91 C71 C51



FIG. 19.

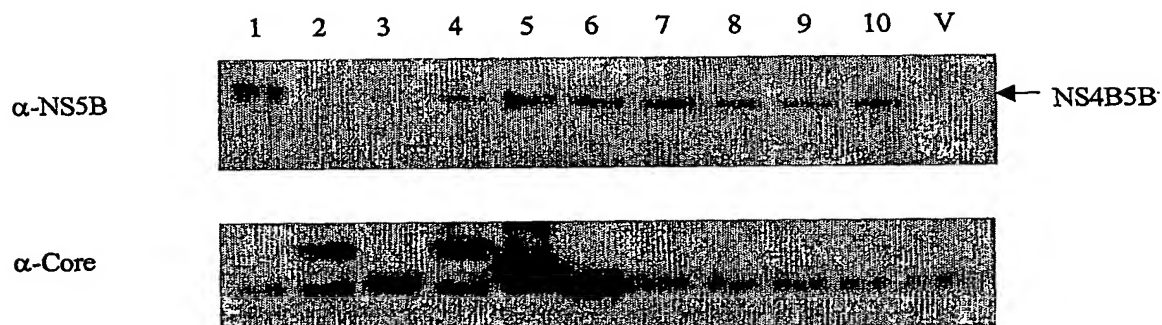
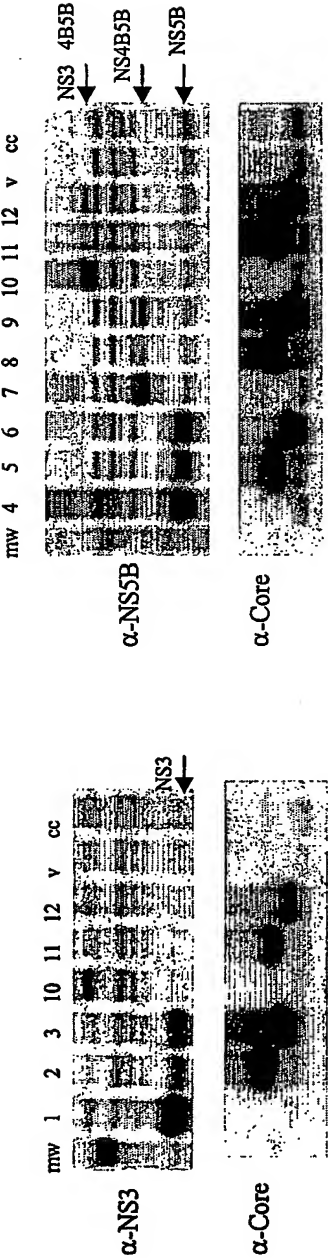


FIG. 20,

Effect of Core and Core₁₅₁ upon expression of NS3, NS5B, NS4B5B, and NS34B5B after co-transfection in 293T cells



Samples:

1. p7/NS3 + v
2. p7/NS3 + p7/Core
3. p7/NS3 + p7/Core151
4. p7/NS5B + v
5. p7/NS5B + p7/Core
6. p7/NS5B + p7/Core151
7. p7/NS4B5B + v
8. p7/NS4B5B + p7/Core
9. p7/NS4B5B + p7/Core151
10. p7/NS34B5B + v
11. p7/NS34B5B + p7/Core
12. p7/NS34B5B + p7/Core151

FIG. 21,

Effect on expression of fusion proteins, after substitution of Core₁ for Core₁₉₁, in transient transfection in 293T cells

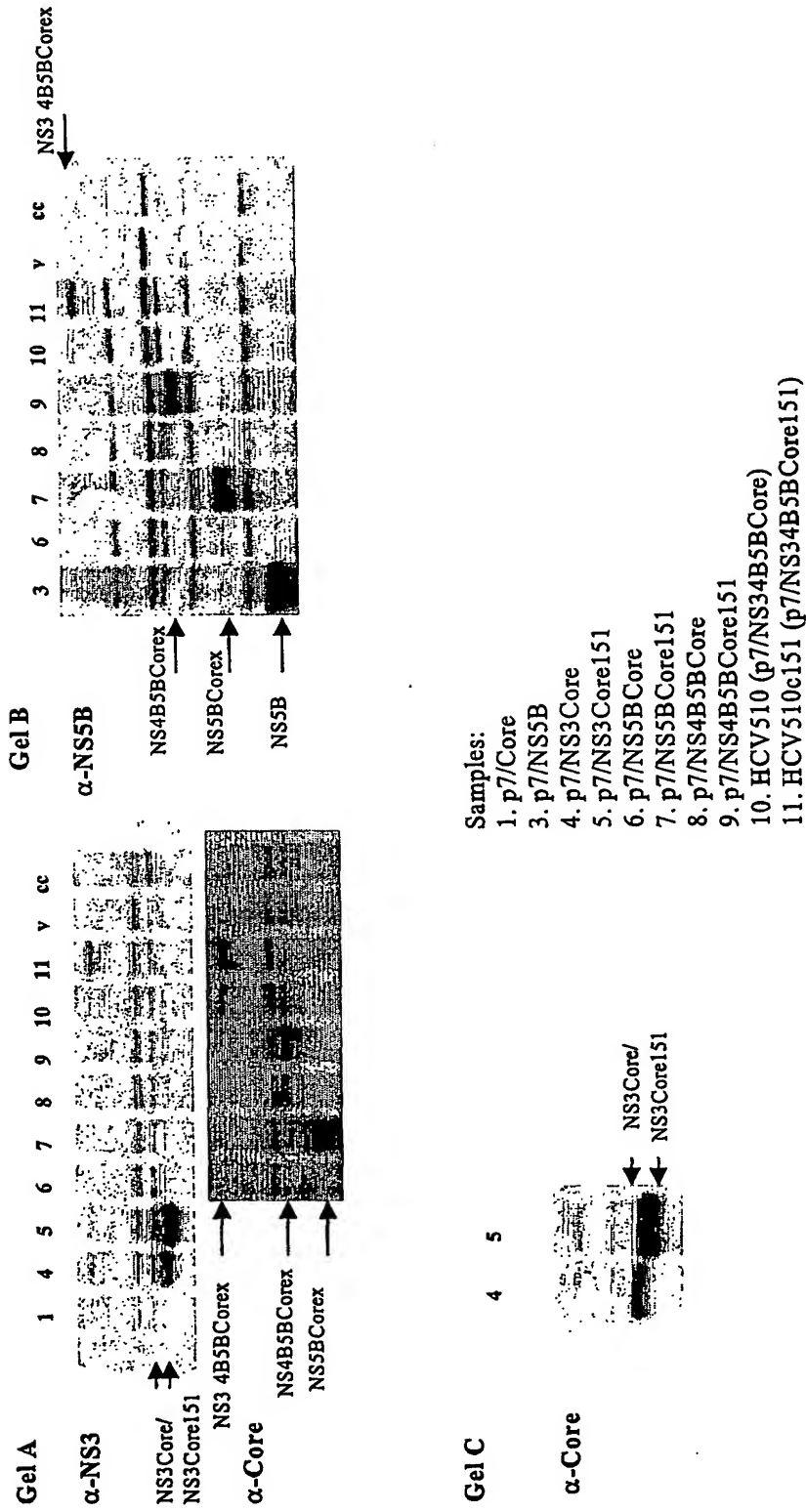
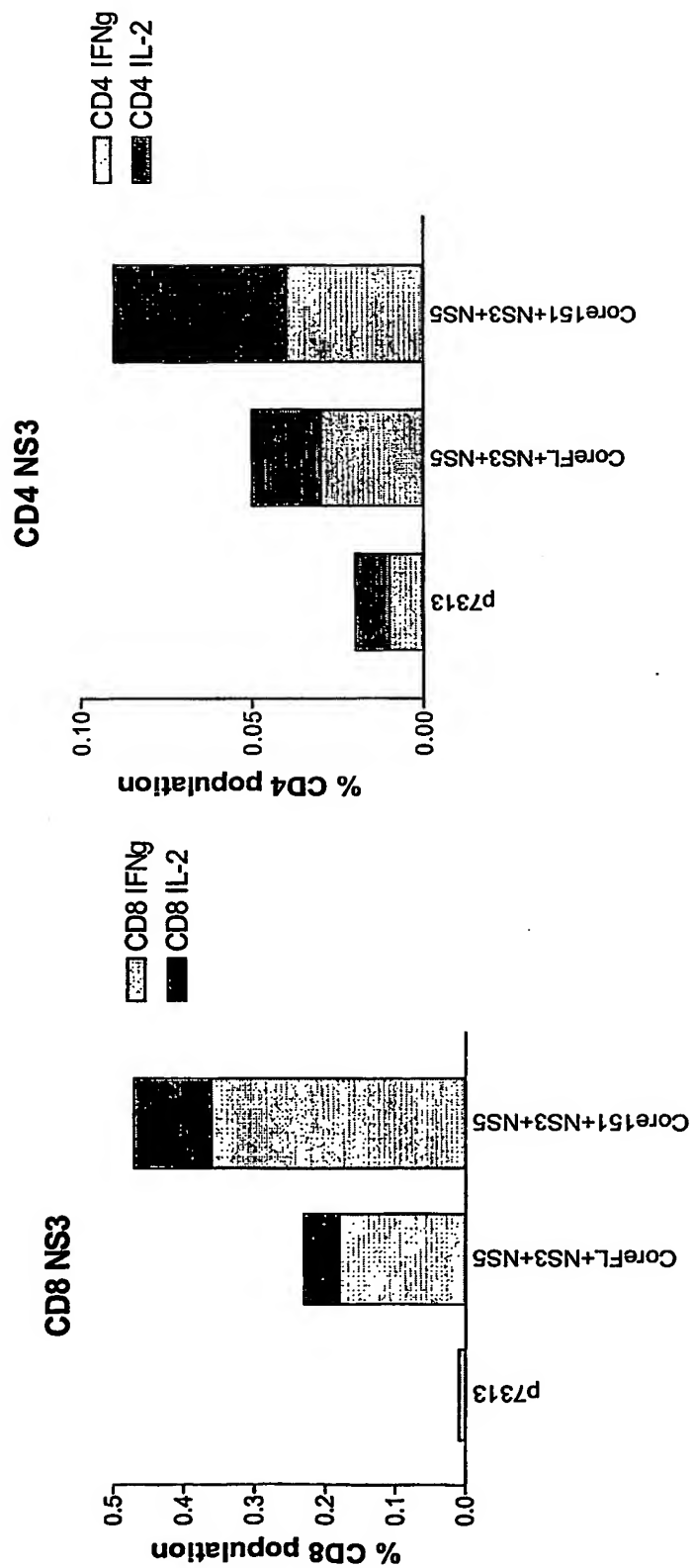


FIG. 22,



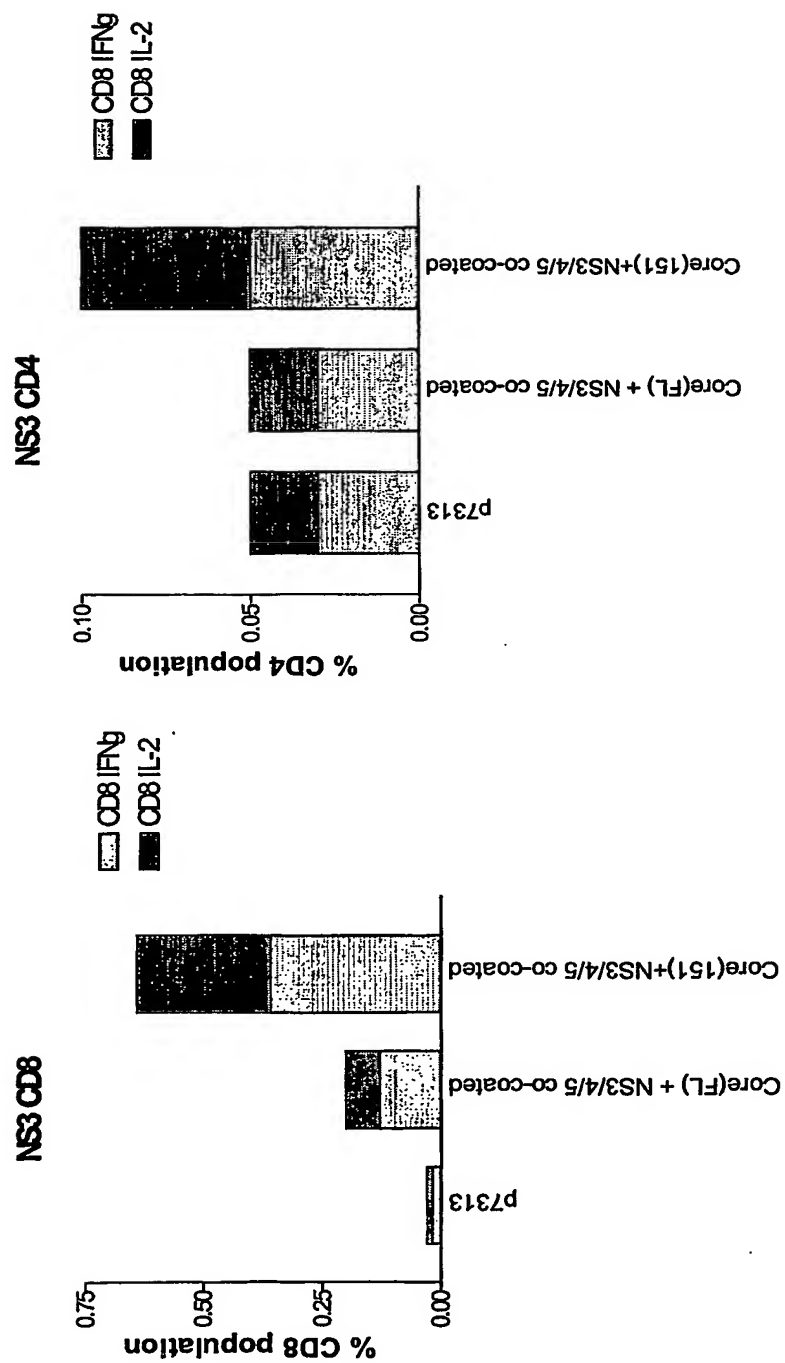


FIG. 23,

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